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Structure of associative subalgebras of Jordan operator algebras

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Abstract

We show that any order isomorphism between ordered structures of associative unital JB-subalgebras (Jordan-Banach) of JBW algebras (dual Jodan-Banach) is implemented naturally by a Jordan isomorphism. Consequently, JBW algebras are determined by the structure of their associative unital JB subalgebras. Furthermore, we show that in a similar way it is possible to reconstruct Jordan structure from the order structure of associative subalgebras endowed with an orthogonality relation. In case of abelian subalgebras of von Neumann algebras, we show that order isomorphisms of the structure of abelian C*-subalgebras that are well behaved, with respect to the structure of two-by-two matrices over original algebra, are implemented by *-isomorphisms.

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